

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-8 (Canceled).

Claim 9 (Currently Amended): A method for synthesis of a routing of a vehicle with a design tool stored in a memory on a computer, comprising:

- a) dividing the vehicle into a plurality of zones, each of the zones including service variants and calculator variants;
- b) obtaining parameters of:
 - different configurations of the service variants and the calculator variants and a percentage occurrence of the configurations, a sum of proportions of the configurations being considered equal to one,
 - cost characteristics of components stored and weighted as a function of their respective installation proportions, and
 - partial or complete mapping of the service variants onto the calculator variants;
- c) identifying valid routings including routings between the service variants and the calculator variants;
- d) evaluating, via a processor of the computer, routing cost of the valid routings for each configuration;
- e) determining, via the processor of the computer, the valid routing that minimizes a mean, weighted by the installation proportions of each configuration, of the routing costs for each configuration;
- f) displaying, in a first view on a display screen of the computer, the plurality of zones into which the service variants and the calculator variants are grouped, wherein the first view

includes a guide to indicate how the plurality of zones are situated relative to one another, the plurality of zones schematically represent a product for which the routing is synthesized, and the first view shows the valid routings between the zones without showing the service variants, the calculator variants, and the valid routing within each of the zones between the service variants and the calculator variants; [[and]]

g) displaying, in a second view on the display screen, the valid routing between the service variants and the calculator variants within a single zone that minimizes the mean of the single zone of the plurality of zones, and the second view is generated by selecting the single zone from the plurality of zones displayed in the first view; and

h) switching back and forth between the first view and the second view such that, in the first view, the valid routings between the zones are displayed without showing the valid routings within the zones and, in the second view, the valid routings within the zones are displayed.

Claim 10 (Previously Presented): A method according to claim 9, wherein a quality characteristic expressed as breakdowns per million is considered to compare respective measures of two candidate architectures for a product plan.

Claim 11 (Previously Presented): A method according to claim 10, wherein one of the quality characteristics considered is weight.

Claim 12 (Previously Presented): A method according to claim 9, further comprising automatically calculating a cost of assembly of electrical and electronic architecture as a function of a cost of assembly of a strand on a zone of the plurality of zones, of a cost of assembly of a connector on a zone boundary or on a zone of the plurality of zones, of a cost

of assembly of a calculator on a zone of the plurality of zones, of a cost of assembly of a sensor or actuator on a zone of the plurality of zones, and of a cost of connection of a connector between zones of the plurality of zones or in a zone of the plurality of zones.

Claim 13 (Previously Presented): A method according to claim 9, further comprising synthesizing optimal routing for all configurations, by repeating operations b) to e), criterion for minimization being a cost composed of:

an estimated recurrent cost of parts,

an estimate of quality cost in anticipation of the cost of repair per zone of the plurality of zones, this quality cost being increased by a constant cost depending on the zone and its ease of access,

an estimate of the cost of weight, taking into account mechanical wear and consumption related to an increase of the weight of the vehicle, and/or

an estimate of the cost of assembly.

Claim 14 (Previously Presented): A method according to claim 9, wherein the synthesis of the routing for the product is an electrical architecture of a newly created product or an electrical architecture modified relative to a previous architecture of the product.

Claim 15 (Currently Amended): A computer readable storage medium including computer executable instructions to synthesize a routing, wherein the instructions, when executed by a processor, cause the processor to perform a method, comprising:

a) dividing the vehicle into a plurality of zones, each of the zones including service variants and calculator variants;

b) obtaining parameters of:

different configurations of the service variants and the calculator variants and
a percentage occurrence of the configurations, a sum of proportions of the
configurations being considered equal to one,

cost characteristics of components stored and weighted as a function of their
respective installation proportions, and

partial or complete mapping of the service variants onto the calculator
variants;

c) identifying valid routings including routings between the service variants and the
calculator variants;

d) evaluating routing cost of the valid routings for each configuration;

e) determining the valid routing that minimizes a mean, weighted by the installation
proportions of each configuration, of the routing costs for each configuration;

f) displaying, in a first view on a display, the plurality of zones into which the service
variants and the calculator variants are grouped, wherein the first view includes a guide to
indicate how the plurality of zones are situated relative to one another, the plurality of zones
schematically represent a product for which the routing is synthesized, and the first view
shows the valid routings between the zones without showing the service variants, the
calculator variants, and the valid routing within each of the zones between the service
variants and the calculator variants; [[and]]

g) displaying, in a second view on the display, the valid routing between the service
variants and the calculator variants within a single zone that minimizes the mean of the single
zone of the plurality of zones, and the second view is generated by selecting the single zone
from the plurality of zones displayed in the first view; and

h) switching back and forth between the first view and the second view such that, in the first view, the valid routings between the zones are displayed without showing the valid routings within the zones and, in the second view, the valid routings within the zones are displayed.

Claim 16 (Currently Amended): A device for synthesis of a routing, comprising:

a) means for dividing the vehicle into a plurality of zones, each of the zones including service variants and calculator variants;

b) means for obtaining parameters of:

different configurations of the service variants and the calculator variants and a percentage occurrence of the configurations, a sum of proportions of the configurations being considered equal to one,

cost characteristics of components stored and weighted as a function of their respective installation proportions, and

partial or complete mapping of the service variants onto the calculator variants;

c) means for identifying valid routings including routings between the service variants and the calculator variants;

d) means for evaluating routing cost of the valid routings for each configuration;

e) means for determining the valid routing that minimizes a mean, weighted by the installation proportions of each configuration, of the routing costs for each configuration; and

f) a display configured to display, in a first view, the plurality of zones into which the service variants and the calculator variants are grouped, wherein the first view includes a guide to indicate how the plurality of zones are situated relative to one another, the plurality of zones schematically represent a product for which the routing is synthesized, the first view

shows the valid routings between the zones without showing the service variants, the calculator variants, and the valid routing within each of the zones between the service variants and the calculator variants, and, the display is configured to display, in a second view, the valid routing between the service variants and the calculator variants within a single zone that minimizes the mean of the single zone of the plurality of zones, and the second view is generated by selecting the single zone from the plurality of zones displayed in the first view,

wherein the display switches back and forth between the first view and the second view such that, in the first view, the valid routings between the zones are displayed without showing the valid routings within the zones and, in the second view, the valid routings within the zones are displayed.

Claim 17 (Canceled).

Claim 18 (Previously Presented): A method according to claim 9, wherein the displaying in the second view includes prohibited subzones which represent a portion of the product through which wires cannot be passed such that the valid routings do not pass through the prohibited subzones.

Claim 19 (Previously Presented): A method according to claim 9, wherein the displaying in the first view includes a first compass as the guide, and the displaying in the second view includes a second compass to indicate how to orient the single zone.

Claim 20 (Canceled).

Claim 21 (Previously Presented): A computer readable storage medium according to claim 15, wherein the displaying in the second view includes prohibited subzones which represent a portion of the product through which wires cannot be passed such that the valid routings do not pass through the prohibited subzones.

Claim 22 (Previously Presented): A computer readable storage medium according to claim 15, wherein

the displaying in the first view includes a first compass as the guide, and

the displaying in the second view includes a second compass to indicate how to orient the single zone.

Claim 23 (Canceled).

Claim 24 (Previously Presented): A device according to claim 16, wherein, in the second view, the display includes prohibited subzones which represent a portion of the product through which wires cannot be passed such that the valid routings do not pass through the prohibited subzones.

Claim 25 (Previously Presented): A device according to claim 16, wherein

in the first view, the display includes a first compass as the guide, and

in the second view, the display includes a second compass to indicate how to orient the single zone.

Claim 26 (Previously Presented): A method according to claim 9, wherein the obtaining different parameters includes displaying on the display screen a user interface for the design tool including a hierarchical list including the service variants from which a user can select a particular service variant from the service variants and a graphical zone in which a user can enter a desired configuration of the particular service variant.

Claim 27 (Previously Presented): A computer readable storage medium according to claim 15, wherein the obtaining different parameters includes displaying a user interface for the design tool including a hierarchical list including the service variants from which a user can select a particular service variant from the service variants and a graphical zone in which a user can enter a desired configuration of the particular service variant.

Claim 28 (Previously Presented): A device according to claim 16, wherein the means for obtaining includes means for displaying a user interface including a hierarchical list including the service variants from which a user can select a particular service variant from the service variants and a graphical zone in which a user can enter a desired configuration of the particular service variant.

Claim 29 (Currently Amended): A method according to claim 9, wherein
the plurality of zones displayed on the display screen in the second view include a right front fender, a left front fender, a right rear fender, a left rear fender, a right front door, a left front door, a right rear door, and a left rear door of the vehicle, and
the single zone is the left front door.

Claim 30 (New): A method according to claim 9, wherein the switching includes changing a shape of each of the zones between the first view and the second view.